

# hybrid 3



air

User Guide  
Manual Version 1.0

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## Introduction



Hybrid is a high-definition software synthesizer that combines the warmth of legendary analog synths with a full range of 21st century digital manipulation capabilities. The result is the best of both worlds—a virtual instrument with a comprehensive set of precisely adjustable parameters that can sound like a synth you remember or something no one has ever heard before.

## System Requirements and Product Support

For complete system requirements, compatibility information, and product registration, visit the AIR website: [airmusictech.com](http://airmusictech.com).

## Installation

### Windows®

1. Double-click the **.exe** installer file you downloaded.
2. Follow the on-screen instructions.

**Note:** Hybrid uses PACE copy protection, so it will install the PACE InterLok driver on your system if you do not already have it. As most audio software uses PACE copy protection, though, this is probably already installed on your system.

### Mac® OS X®

1. Double-click the **.pkg** installer file you downloaded.
2. Follow the on-screen instructions.

## Understanding Hybrid

### Subtractive vs. Wavetable Synthesis

Hybrid's unique sound engine uses a combination of classic "subtractive" and digital "wavetable" synthesis to give you a very wide palette of sounds.

#### Subtractive Synthesis:

This process of generating and shaping sound is called subtractive synthesis because it deals mainly with removing frequencies from the highly harmonic waveforms. Subtractive synthesis generally starts with one or more oscillators producing electronic waveforms with rich harmonic content. Successive modules (such as filters and amplifiers) then shape this sound by varying the harmonic content and level. Additional modules (such as Envelope Generators and Low-Frequency Oscillators) are then used to shape and vary the sound over time (a process known as "modulation").

#### Wavetable Synthesis:

Wavetable synthesis became popular with the first digitally controlled synthesizers. A wavetable is a file that consists of 64 different single-cycle waveforms. A digital oscillator runs through these waveforms to create complex and vivid sounds. Wavetable synthesis is usually combined with subtractive synthesis for additional sound-shaping.

### The Hybrid Synthesizer and its "Parts"

Before getting into the details, it's important to understand that Hybrid actually has two complete synthesizer cores that work together. These cores are called "Parts" (or "Part A" and "Part B"). You can use these Parts to create things like velocity layers, keyboard splits, or to spread different sounds across the stereo field. The controls for Parts A and B are identical.

You can save individual Parts on the **Part Presets** page. Alternatively, you can save complete "patches" (including both Parts and all other Hybrid parameters) by using the **Save** button at the top right of the instrument. Both of these will be explained later in this guide.



## Hybrid's Graphical Interface

### Setup Section

### Control Pages

### Master Section



Hybrid has a straightforward user interface that can be broken down into three sections. The top ("Setup") and bottom ("Master") sections are always visible; the Control Pages area (in the middle) changes depending on what you have selected.

- **Setup Section:** This area lets you load and save Hybrid patches as well as navigate to any of the Control Pages. This section is described on the next page.
- **Control Pages:** This area shows one of the seven Control Pages where you can program Hybrid sounds and effects. This user guide has a separate chapter for each of the pages.
- **Master Section:** This area has "global" controls including Master Volume and the innovative "Morph" knobs. To learn more, see **Master Section** later in this chapter.

## Setup Section



The left half of the Setup section (items 1-5 above) let you access Hybrid's seven Control Pages. The right half is for saving and loading complete Hybrid sounds ("Patches").

1. **Part A/B Page:** Provides controls for all sound generating parameters of Part A or B, such as settings for its oscillators, filters, amplifiers, envelopes, and LFOs.
2. **Part A/B Seq:** Provides controls for the sequencer of Part A or B. The settings include the sequencer lanes for Note, Velocity, Control 1 and Control 2, and additional Playback modes (such as arpeggios and MIDI phrases).

**Note:** Parts A and B are identical and provide the same controls on both their Part and Sequencer pages.

3. **Common Page:** Provides controls for adjusting the overall pitch and voice management across all Parts. In addition, there are global settings governing the operation of Hybrid.
4. **Effects Page:** Provides controls for the Part A and B insert effects as well as the master effects applied to the whole patch.
5. **Part Presets Page:** Provides controls for loading and saving presets of Part A and B and gives access to the most commonly edited synthesizer parameters.
6. **Save/Load Section:** This section lets you load and save sounds.
  - **Loading Sounds:** To load a sound, click the screen to bring up a categorized list of Hybrid sound patches. You can also use the arrow buttons to the right of the patch name to quickly shift between sounds.
  - **Saving Sounds:** To save a sound, click the **Save** button. If you wish to quickly overwrite the file you are currently working on without changing the file name or bringing up the file browser, you can do so by shift-clicking the **Save** button.

## Master Section



The Master Section the innovative "Morph" controls (items 1-2) as Part on/off switches and a master volume control.

1. **Edit Morph Controls:** The **1-4** Edit Morph buttons activate the editing and displaying of assigned parameters of a Morph group. The **Clear** button deletes all assignments of the edited Morph group. These controls are covered in detail in the next section of this guide.
2. **Morph Knobs:** You can assign each of these knobs to control many parameters throughout Hybrid. These controls are covered in detail in the next section of this guide.  
**Note:** All Morph group assignments and settings are saved and restored with the patch.
3. **Part On:** These buttons let you switch Parts A and B on and off. A lit button indicates the Part is active.
4. **Volume:** Sets the master output volume of Hybrid.

## Morph Controls

Hybrid has an innovative "Morph" control system that gives you easy and instant access to many parameters throughout the synthesizer. This system lets you assign nearly any Hybrid control (knob, fader, envelope, etc.) to a "Morph group" and then use one knob to control all of the desired parameters simultaneously. This allows you to make very complex changes in your Hybrid sounds by turning a single knob.

**Tip:** You can assign a MIDI controller, such as a modulation wheel or your keyboard's aftertouch, to a Morph Control. See the following **Morph Group Controller** section to learn how to do this.

### To assign a knob or fader:

1. In the Master section, select a Morph group by clicking one of the **1-4** Edit Morph buttons.
2. Hold **Shift** while you click-and-drag the control you want to assign, such as Filter Cutoff.
3. Set the control's morph range.
  - To specify a morph positive in direction, Shift-drag the control, as you would to increase its value.
  - To specify a morph negative in direction, Shift-drag the control, as you would to decrease its value.
  - The indicator on your knob of a fader marks the start value of the morph. The yellow next to a knob or fader indicates the morph range and direction.

You can make adjustments and assignments as long as you are in Edit mode.

4. When you are finished, click the **1-4** Edit Morph button to deactivate Edit mode.

**Note:** A Hybrid control can only be assigned to one Morph group at a time.

**To assign a graphic control:**

1. Choose a Morph group by clicking one of the **1-4** Edit Morph buttons.
2. Hold **Shift** while you click and drag the control you want to assign.
  - With envelopes, the yellow envelope represents the values the envelope morphs to. The blue envelope in the background represents the original envelope. Use Shift-drag to change the yellow envelope to achieve a morph. Dragging without holding Shift adjusts the blue envelope.
  - With LFOs, Shift-click the rate cursor and drag left to increase the rate or drag right to decrease the rate through morphing. A yellow bar represents the morph range and direction.
3. Deactivate the Edit Morph button of the Morph group to finish editing.

**Note:** Graphic controls can only be assigned to one Morph group at a time.

**To view or edit morph ranges:**

1. Select a Morph group by clicking one of the **1-4** Edit Morph buttons.
2. Select a Control Page that contains the control that you're interested in viewing or editing. Yellow lines appear next to all controls that are assigned to that Morph group.
3. To change the morph range:
  - To change the end value, Shift-drag the control.
  - To change the position of the morph range (start and end value), Shift+Alt-drag (Windows) or Shift+Option-drag (Mac OS X) the control.
  - Dragging without holding Option changes the start value of the morph range.

You can make adjustments and assignments as long as you remain in Edit mode.
4. When you are finished editing, click the **1-4** Edit Morph button to deactivate Edit mode.

## Morph Group Controller

MIDI controllers give even better control over Hybrid's Morph groups. For example, use the Modulation Wheel or Aftertouch from your MIDI keyboard to have immediate control over morphs.

### To assign a MIDI controller to a Morph group:

1. Select the **Common** page.
2. Make one of the following settings in the **Morph Assign** section:
  - **Off:** Uses only the morph rotary control on the plug-in surface.
  - **Mod Wheel:** Uses the modulation wheel to control the morph (CC# 01).
  - **Aftertouch:** Uses channel pressure to control the morph.
  - **Pitch Bend:** Uses pitch bend to control the morph.
  - **Foot Pedal:** Uses the MIDI pedal to control the morph (CC# 04).
  - **Breath:** Uses the breath controller to control the morph (CC# 02).

**Note:** You can also assign a continuous controller to the morph rotary controller with the MIDI controller mapping. The difference is the settings above save with the patch and the MIDI controller mapping saves only with the session.

## MIDI Controller Mapping

Hybrid lets you assign standard MIDI controllers to virtually any parameter so that you can control Velvet from a MIDI controller in real-time.

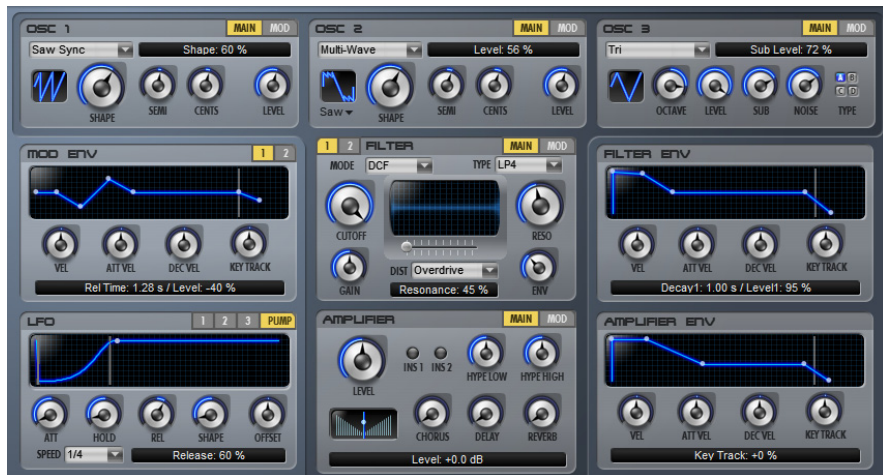
### To assign a MIDI controller to a parameter:

1. Right-click (Windows or Mac OS X) or Control-click (Mac OS X) a control.
2. Do one of the following:
  - a. Select the desired MIDI controller from the **Assign** sub-menu.
  - b. Select **Learn**, and move the desired control on your MIDI controller. The parameter is automatically assigned to that control.

### To un-assign a MIDI controller:

1. Right-click (Windows or Mac OS X) or Control-click (Mac OS X) a control.
2. From the menu that appears, select **Forget**.

## Part Pages



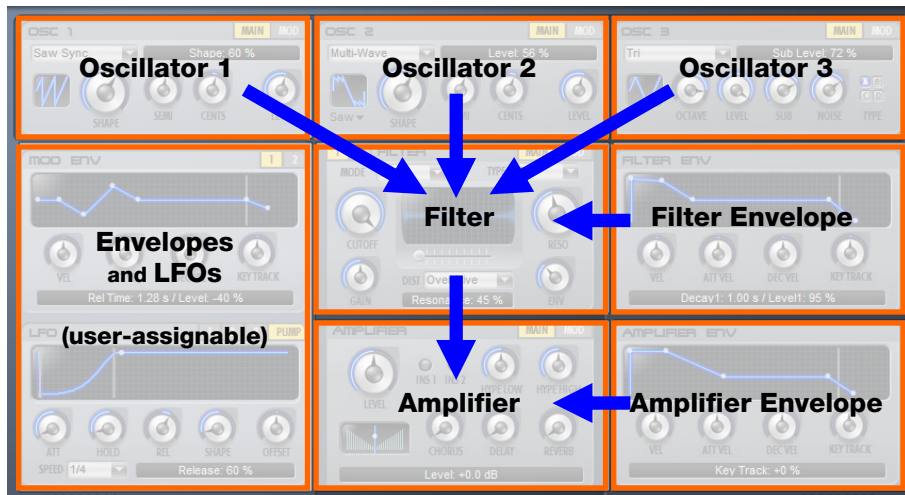
The Part A and Part B pages give detailed access to all sound-generating parameters of Hybrid.

**Note:** The two pages have identical controls, so this chapter applies to both Parts.

This Page may appear overwhelming at first, but not to worry—the layout of the various modules (such as Oscillator, Filter, Amplifier, etc.) follows Hybrid's signal flow. Signals start at the top with the three oscillators and flow downward through the filter and finally the Amplifier. The Filter and Amplifier modules have dedicated envelopes located to their right. Finally, there are freely assignable Modulation envelopes and LFOs are on the left side of the page.



## Overview of Signal Flow



Each Hybrid Part has three independent Oscillators along the top of each Part page. These oscillators feed into a Filter section containing two separate filters. The output of the Filter section is then fed into an output amplifier that controls the volume of the Part.

The Filter(s) and Amplifier have dedicated envelopes located directly to the right of each module. These envelopes are "hard-wired" to control the Filter or Amplifier.

Finally, to the left of the Filter and Amplifier, you'll find two Mod envelopes and four LFOs that can be assigned to control a variety of different parameters.

## Oscillators



### Oscillator Overview

The two main oscillators, Oscillators 1 and 2, offer various waveforms and provide tuning controls calibrated in semitones and cents. Each waveform is unique in its function and sound. The **Oscillator Type** drop-down menu selects the basic waveform of the oscillator, and the **Shape** control provides further control over the waveform's tone color.

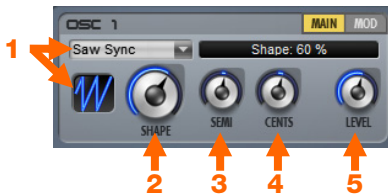
Oscillator 3 primarily supports Oscillator 1 and 2; it transposes in octave steps and provides classic waveforms like sawtooth, square, and triangle as well as Sub oscillator and Noise generator. The Sub oscillator has a square waveform and follows the pitch of Oscillator 3 but one octave lower. The Noise generator outputs white noise. A blend of Oscillator 3 with noise also serves as a Modulation source for the filter.

**Note:** Each oscillator contains two pages: **Main** and **Mod**. These pages are accessed by clicking the corresponding buttons at the top-right of each module. Both of these pages are described in the following pages of this section.

## Oscillators 1-2

### Oscillators 1-2 (Main Tab)

1. **Oscillator Type:** The drop-down menu at the top selects the oscillator type (the basic waveform and algorithm). The **Wavetable** and **Multi-wave** options have sub-options that can be selected by clicking the small triangle under the display.
2. **Shape:** Selects the tone color of the Oscillator. For some oscillator types, higher settings of this control can result in radical sonic effects. A setting of 0% is neutral and has no effect on the sound. The function of this knob varies depending on your Oscillator Type selection:
  - The pitch ratio between master and slave of a sync oscillator (**Saw Sync** and **Squ Sync** types)
  - The pitch ratio between carrier and modulator of a cross modulation oscillator (**Saw CM** and **Squ CM**)
  - The amount of detuning between the waves of a **Multi-Wave** oscillator
  - The pulse width of a square wave (**Squ PWM**)
  - The wave index of a wavetable oscillator (**Wavetable**)

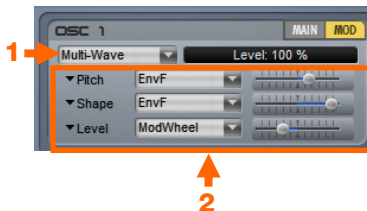


**Tip:** For more detailed descriptions of the available waveforms, please see **Appendix: Oscillator 1-2 Type Descriptions**.

3. **Semi:** Transposes the pitch of the oscillator up or down by semitones. The control range is from:24 to +24 semitones (two octaves down or up). Use this feature to tune the oscillator to an interval such as a perfect fifth (-7 or +7) for interesting tonal effects.
4. **Cents:** Sets the pitch of the oscillator in hundredths of a semitone. The control range is from:50 to +50 cents. Use this control to detune an oscillator relative to the other oscillators. Detuned oscillators animate and thicken the sound.
5. **Level:** Sets the volume of the oscillator.

## Osc 1-2 (Mod Tab)

1. **Oscillator Type:** The drop-down menu at the top selects the oscillator type (the basic waveform and algorithm). The **Wavetable** and **Multi-wave** options have sub-options that can be selected by clicking the small triangle under the graphical display.
2. **Modulation Matrix:** This area lets you connect the various modulation sources (such as an envelope or LFO) to the various parameters of the oscillator (such as the **Pitch** or **Shape** knob). You can also set how strongly you want the modulation source to affect the destination.
  - **Destination:** Click the small triangle at the left edge of this section to select the parameter that you would like to control (known as the "destination").
  - **Source:** The drop-down menu in the middle determines which "source" will be used to modulate the destination. There are many options you can choose from (any of the envelopes or LFOs, data from the sequencer, or incoming MIDI data).
  - **Amount:** The horizontal fader on the right determines how strongly the source modulates the destination, from -100% to +100%. Note that setting this fader to **0%** will mean no modulation will take place.



## Oscillator 3

### Oscillator 3 (Main Tab)

The Oscillator 3 Main page provides controls for Oscillator 3, the Sub oscillator, and the Noise generator. Oscillator 3 features the classic sawtooth, square, and triangle waveforms and can serve as a Modulation source for Filter FM. In general, its pitch follows that of the Part. The Sub oscillator generates a square wave that follows the pitch of Oscillator 3 but one octave lower.

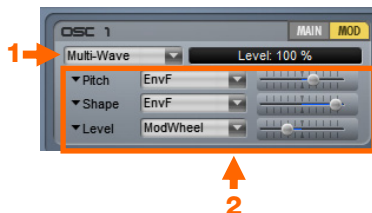


1. **Oscillator Type:** Selects the wave shape of Oscillator 3.
2. **Octave:** Transposes the pitch of the oscillator up or down by two octaves.
3. **Level:** Sets the volume of Oscillator 3.
4. **Sub:** Sets the volume of the Sub oscillator.
5. **Noise Level:** Sets the volume of the Noise generator. The Noise generator provides four different colors of noise:
  - **A (White Noise):** Is a combination of equal amounts of all audio frequencies. In general, white noise delivers a bright hiss with no pitch information, and can be used to synthesize non-pitched sounds (such as drums or wind effects).
  - **B (Blue Noise):** Is filtered white noise that is brighter, thinner and cleaner.
  - **C (Mod):** Is white noise with amplitude modulation by Oscillator 3 for a pulsing, grating sound.
  - **D (Crackle):** Provides sparse noise, like a dusty vinyl record. You can use Crackle to add a vintage character to the sound.

### Osc 3 (Mod Tab)

This page has three destination controls for modulating Oscillator 3, Sub oscillator, and Noise generator. The destinations can be addressed multiple times.

**Note:** Since Oscillator 3 always follows the Part's pitch, it is not possible to modulation the pitch of this oscillator.



1. **Oscillator Type:** The drop-down menu at the top selects the oscillator.
2. **Modulation Matrix:** This area lets you connect the various modulation sources (such as an envelope or LFO) to the various parameters of the oscillator (such as the Level or Noise knobs). You can also set how strongly you want the modulation source to affect the destination.
  - **Destination:** Click the small triangle at the left edge of this section to select the parameter that you would like to control (known as the "destination").
  - **Source:** The drop-down menu in the middle determines which "source" will be used to modulate the destination. There are many options you can choose from (any of the envelopes or LFOs, data from the sequencer, or incoming MIDI data)
  - **Amount:** The horizontal fader on the right determines how strongly the source modulates the destination, from -100% to +100%. Note that setting this fader to **0%** will mean no modulation will take place.

## Filter



Hybrid's analog modeling filter block contains two independent filters. For each of these two filters, you can choose from 23 different Filter types ranging from classic 4-pole low-pass to completely new and unique types. The filter types are described in **Appendix: Filter Types**.

All Filter types include **Cutoff** and **Resonance** controls. The **Saturation** control adds the characteristic grit of an overdriven filter to the sound. By default, cutoff is modulated from a dedicated Filter envelope, located directly to the right of the filter module. The **Env** (Envelope) knob adjusts the depth of this modulation.

**Note:** The filter module contains two separate filters that can be viewed by clicking the **1** and **2** buttons at the top-left of the page. Each of these filters has two pages: **Main** and **Mod**. These pages are accessed by clicking the corresponding buttons at the top-right of the module. All of these pages are described in the rest of this section.

## Filter 1 (Main Tab)



1. **Mode:** Displays and selects the Filter mode, either **DCF** or **VCF**. DCF mode (Digitally Controlled Filter) emulates a sharp and precise-sounding digital filter. VCF mode (Voltage Controlled Filter) emulates the warm, analog sound of the filters in classic analog synthesizers.
2. **Type:** Displays and selects the Filter type and structure. Capital letters describe the Filter type (for example, "LP" stands for "low-pass"). The number indicates the attenuation by number of poles (one pole equals an attenuation of 6 dB/oct). If a mode combines more than one Filter type, they are both listed, separated by a plus (+) sign.
3. **Cutoff:** Adjusts the cutoff frequency of the filter. Depending on the Filter type, frequencies above, below, or above and below the cutoff frequency are attenuated.
4. **Resonance:** Emphasizes the frequencies around the cutoff. With increasing values, the tonal color changes from an open neutral sound, to a nasal sound, to a ringing tone, caused by self-oscillation of the filter. Values above 90% usually drive the filter into self-oscillation.



5. **Gain:** Adjusts the gain of the filter section. This can be used to compensate for reductions in signal level due to filtering.
6. **Env:** Controls the cutoff modulation from the Filter envelope. Higher settings of this control cause the filter to open wider.
7. **Dist:** This section adds color to the filtered sound by using the integral distortion of the filter. There are seven distortion types, each with a distinct tonal character. The drop-down menu lets you select the distortion type. The horizontal slider above the menu sets the amount of filter saturation.

The sonic effects range from slight overdrive to hard-distorted sounds with subharmonics. Higher values introduce more extreme effects. The graphic display in the middle of the Filter section indicates the amount of saturation that is used.



Mode	Description
Overdrive	Creates a soft, tube-like clipping.
Distort	Creates a harder, brighter clipping.
Hard Clip	Creates a hard, bright, transistor-like clipping
Rectify	Creates a gentle distortion, which retains the character of the input.
Bit Crush	Reduces the bit depth, creating deliberate aliasing.
Resample	Reduces the sample rate, creating deliberate aliasing

## Filter 1 (Mod Tab)



This page provides the controls for Filter FM and three sets of modulation source and destination. Each destination can be set to Cutoff, Resonance, and FM depth.

1. **Modulation Matrix:** This area lets you connect the various modulation sources (such as an envelope or LFO) to the various parameters of the filter (cutoff, resonance, or FM). You can also set how strongly you want the modulation source to affect the destination.
  - **Destination:** Click the small triangle at the left edge of this section to select the parameter that you would like to control (known as the "destination").
  - **Source:** The drop-down menu in the middle determines which "source" will be used to modulate the destination. There are many options you can choose from (any of the envelopes or LFOs, data from the sequencer, or incoming MIDI data)
  - **Amount:** The horizontal fader on the right determines how strongly the source modulates the destination, from -100% to +100%. Note that setting this fader to 0% will mean no modulation will take place.

2. **Key Track:** Allows for cutoff modulation by MIDI note number. The control range is from -100% to +100%. With a low-pass filter and no key tracking applied, higher notes sound darker as the pitch moves beyond the cutoff. When key tracking is set to **+100%**, the pitch of the played MIDI note modifies the Filter cutoff in the same direction. Higher notes increase the cutoff frequency and thus avoid tonal changes over the entire keyboard range. Settings in between result in varying degrees of tonal change.
3. **FM Mix:** Blends the modulation signal between Oscillator 3 and the Noise generator. A setting of **0%** sends only Oscillator 3 to the cutoff. A setting of **100%** sends only noise to the cutoff. Use Oscillator 3 for a more regular modulation. Noise generates a random modulation with no pitch information.
4. **FM Depth:** Sets the amount of Filter FM. The sonic effect depends on the modulation signal, which is specified using the FM Mix control and the wave shape of Oscillator 3. The amount of Filter FM can also be modulated with the filter's modulation source and destination.

### Creating a Filter FM Sound:

Modulating the cutoff at the audio rate produces Filter FM. Frequency modulation has the reputation of being hard to use. However, if you keep the following rules in mind, this feature is as easy to use as any other in Hybrid.

1. **Filter FM is best used when the filter is self-oscillating.** Therefore, please make sure the **Resonance** control on the Main page is turned fully clockwise.
2. **The higher the frequency of the modulating oscillator, the richer the sidebands.** Use the **Octave** control of Oscillator 3 to raise the pitch. Turn the levels of Oscillator 3 and the Sub oscillator all the way down to make them inaudible.
3. **Without moving the Cutoff, you will produce a static sound.** Modulate the cutoff with the Filter envelope to sweep through the sidebands.

## Filter 2 (Main Tab)



Hybrid's second filter can be viewed by clicking **2** at the top-left of the Filter module. On the second filter, all of the controls on the Main and Mod pages are identical to those of the first filter, except one:

1. **Routing:** This drop-down menu lets you select how signals flow from one filter to the other. The options are as follows:



Mode	Description
Off	Turns the second filter off.
Serial	Signal flows from Filter 1 to Filter 2.
Parallel	Incoming signal is fed to Filter 1 and Filter 2 simultaneously and is combined.
L/R	Filter 1 is applied to the left channel; Filter 2 is applied to right channel
Osc	Oscillator 1 feeds Filter 1; Oscillator 2 and 3 feeds Filter 2

## Amplifier Section



The Amplifier section controls the loudness of a Part and its position in the stereo field. In addition, it has activation buttons for the effects Inserts and knobs to control how much signal is sent to three Master Effects.

The amplifier is hard-wired to the Amplifier envelope (located directly to the right), which shapes the sound dynamically. "Hard-wired" means the envelope affects the amplifier always at full intensity. Additional modulations, such as tremolo or panorama modulations from LFO, can be selected on the Mod page.

## Amplifier (Main Tab)



On its Main page, the amplifier provides the controls for level and position, the two activation buttons for the effects Inserts, and the three sends for the master effects. The controls for Pan key tracking and random modulation—and the three modulation sources and destinations—are set on the Amplifier's Mod page. The Amplifier section provides the following controls:

1. **Level:** Controls the volume of the Part.
2. **Pan:** The graphic control displays and sets the output signal's position in the stereo field. Click and drag the vertical blue line to change the position.
3. **Ins 1-2:** Activates and deactivates the effects inserts of the Part. Click each button to switch the insert on or off. The insert is active when its button is lit.
4. **Hype Low:** Adjusts the amount of boost applied to lower-frequency sounds with an optimal range and curve determined by Hybrid's Hype algorithm.
5. **Hype High:** Adjusts the amount of boost applied to higher-frequency sounds with an optimal range and curve determined by Hybrid's Hype algorithm.
6. **Chorus:** Sets how much of this Part is sent to the Chorus Master Effect.
7. **Delay:** Sets how much of this Part is sent to the Delay Master Effect.
8. **Reverb:** Sets how much of this Part is sent to the Reverb Master Effect.

**Tip:** To learn more about effects Inserts and the Master Effects section, please refer to the **Effect Page: Master Effects** section of this guide.

## Amplifier (Mod Tab)



This page provides controls for two pre-assigned stereo field modulations, and three sets of modulation destinations and sources.

1. **Modulation Matrix:** This area lets you connect the various modulation sources (like the Sequencer or an LFO) to the volume and pan parameters of the Amplifier. You can also set how strongly you want the modulation source to affect the destination.
  - **Destination:** Click the small triangle at the left edge of this section to select the parameter that you would like to control (known as the "destination").
  - **Source:** The drop-down menu in the middle determines which "source" will be used to modulate the destination. There are many options you can choose from (any of the envelopes or LFOs, data from the sequencer, or incoming MIDI data)
  - **Amount:** The horizontal fader on the right determines how strongly the source modulates the destination, from -100% to +100%. Note that setting this fader to **0%** will mean no modulation will take place.

2. **Key Track Pan:** Changes the Part's position in the stereo field with MIDI note number. The control range is from -100% to +100%. The center point is in the keyboard center (middle C) and marks the center position in the stereo field. Set a positive value to move the sound left as you play low notes and right as you play higher notes. Specify a negative value to move the sound right as you play low notes and left as you play higher notes.
3. **Random Pan:** Use this control to offset the sound in the stereo field randomly each time you play a note. Higher values produce greater offsets to the left and right.

**Tip:** Use the **Pan** control to reset the stereo balance after applying modulation, if necessary.



## Envelope Sections



1. **Filter Env:** The Filter envelope controls the Filter module to its left. It is unipolar, meaning it modulates in one direction only. It provides five segments: **Attack**, **Decay1**, **Decay2**, **Sustain**, and **Release**. The shape of the envelope is modeled after classic analog synthesizers with logarithmic attack and exponential decay and release. In general, it modulates the Filter cutoff by the amount set by the envelope parameter of the Filter section. The modulation matrix allows you to use this envelope in other areas of Hybrid.
2. **Amp Env:** The Amplifier envelope controls the Amplifier section to its left. The envelope is unipolar, meaning it modulates in one direction only. It provides five segments: **Attack**, **Decay1**, **Decay2**, **Sustain**, and **Release**. The shape of the envelope is modeled after classic analog synthesizers with logarithmic attack and exponential decay and release. The Amplifier envelope is hard-wired to the amplifier to give shape to the loudness of a sound. However, the modulation matrix allows you to use this envelope in other areas of Hybrid.

1. **Mod Env 1/2:** The two Modulation envelopes are located to the left of the Filter section. By default, the Modulation envelopes are not assigned; you must use the modulation matrix to assign these envelopes to control various parameters throughout Hybrid. To maximize flexibility, their signals are bipolar allowing for modulations in both directions, positive and negative. They provide six segments: **Delay**, **Attack**, **Decay1**, **Decay2**, **Sustain**, and **Release**. The shape is linear for all segments.

**Note:** There are two envelopes available. You can use the **1-2** buttons at the top-right to select which one you would like to view and edit.

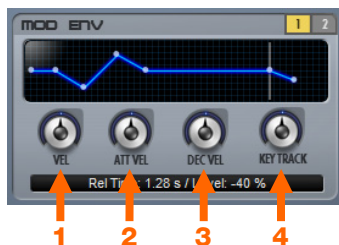
## Graphic Editing of Envelopes

The blue lines in the control graph illustrate times and levels of the envelope. You can click-and-drag the points of the line to adjust the segments to your preferences.

**Tip:** On the Modulation envelopes, use Alt-click (Windows) or Option-click (Mac OS X) to reset the level of a segment. Also, the last-edited envelope parameter displays in the text box of the **Envelope** section. You can type in a value in the text box to adjust it numerically.

### Envelopes:

1. **Vel (Velocity):** Modifies the amplitude of the envelope by MIDI velocity. The control range is from -100% to +100%. With positive values, the loudness of a sound or the intensity of a modulation increases the harder you hit the note. With negative values, the loudness of a sound or the intensity of a modulation decreases the harder you hit the note. Use this feature to add expressiveness to your performance.



2. **Att Vel (Attack Velocity):** Modifies the response of the attack segment by MIDI velocity. The control range is from -100% to +100%. With positive values, the attack time increases the harder you hit the note, so the envelope responds slower. With negative values, the attack time decreases the harder you hit the note, so the envelope responds faster. Use this feature to mimic the attack behavior of acoustic instruments.
3. **Dec Vel (Decay Velocity):** Modifies the response of the decay and release segments by MIDI velocity. The control range is from -100% to +100%. With positive values, the decay and release times increase the harder you hit the note, so the envelope decays slower. With negative values, the decay and release times decrease the harder you hit the note, so the envelope decays faster. Use this feature to mimic the decay behavior of acoustic instruments that decay slower the harder you play them.
4. **Key Track:** Modifies all times of an envelope by MIDI note number. The control range is from -100% to +100%. The center point of the key tracking is at the center of the keyboard scale. With positive values, notes above the bias point are longer and notes below the bias point are shorter. With negative values, notes above the bias point are shorter and notes below the bias point are longer. Use this feature to mimic acoustic instruments that decay faster with higher notes.

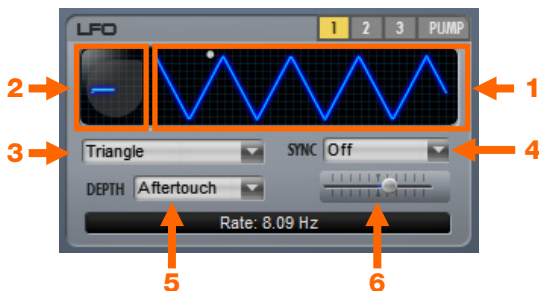
## LFO Section



Hybrid features four LFO (Low-Frequency Oscillator) sections per Part. The LFO section is located to the left of the Amplifier section. You can view and edit one of the four LFOs by clicking the selector buttons at the top-right of the screen (labeled **1, 2, 3, Pump**).

- **LFOs 1 and 2:** Are monophonic, meaning each LFO produces one modulation signal that is distributed to all voices of a Part, which is ideal for vibrato or tremolo.
- **LFO 3:** Is polyphonic, meaning it produces one modulation signal per voice of a Part resulting in a richer, more modulated sound. The speed of LFO 3 can be modulated.
- **Pump:** Is a special type of envelope that simulates the "pumping and breathing" effect that is commonly heard in popular dance music. Normally, this is done by keying the gain reduction of an overall mix bus compressor to the kick drum. In the case of Hybrid, this rhythmic effect that can be applied to much more than the overall mix. With Hybrid, the Pump LFO can be routed to create a rhythmic effect on a variety of specific parameters. This is described later in this section.

**Note:** By default, the LFOs are not assigned to a Modulation destination. You can use all LFOs as modulation sources on all Mod pages. All LFOs produce bipolar modulations, modulating the destination parameter above and below its current value.



1. **Waveform:** This display shows the waveform of your LFO. You can change the rate of the LFO by clicking and dragging the white dot at the top of the screen right or left. Dragging the dot left increases the rate (faster modulation) whereas dragging to the right reduces the rate (slower modulation).

**Note:** The **Sync** mode rate determines the speed in fractions of a beat or in multiples of step sequencer steps.

2. **Phase:** This display describes the start point of the wave or modulation. You can click and drag this display to adjust the start point of the LFO. The control range is from 0° to 359° plus a **Random** setting. Choose **Random** for a varying starting angle with each restart of the LFO.

**Note:** The **Sync** parameter has to be active for this parameter to have an effect. Without a Sync mode set, the LFO runs freely. The various sync modes let you synchronize from your MIDI keyboard or audio software's master tempo.

3. **Shape:** Selects the shape of the modulation the LFO produces. Your selected waveform is displayed in the Waveform display. Please refer to **Appendix: Low-Frequency Oscillator (LFO) Types** for a detailed description of the available waveforms.

4. **Sync:** The LFOs have six different Synchronization modes to determine how rate and phase respond to your play on the keyboard, the tempo of the song, or the internal step sequencer. This way the modulation can be matched to an envelope sweep, the beat of the song or a sequencer phrase.

When the Sync mode is set to **Off**, the LFO is freely running. Choose a mode from the drop-down list to activate LFO synchronization and bring Sync mode and the Phase control into effect.

Depending on the mode, the rate display switches from values in Hertz (Hz) when freely running to values in note length or multiples of step sequencer steps when running synchronized. The six modes work as follows:

- **Off:** The LFO is freely running with the frequency set by the Rate control. Values display in units of Hertz or seconds.
- **First Note:** The LFO restarts when a note is played while no other notes are held. The Rate parameter indicates values in units of Hertz or seconds. Use this method to synchronize the modulation to an envelope sweep.
- **Each Note:** The LFO restarts whenever a note is played. The Rate parameter indicates values in units of Hertz or seconds. Use this method to synchronize the modulation to an envelope sweep.
- **Step Seq:** The LFO restarts with Hybrid's step sequencer. The LFO rate specifies in multiples of step sequencer steps. Use this method to produce sweeps that match the length of a sequencer phrase.
- **Note+Tempo:** The LFO rate is specified in fractions of a beat (note length) and restarts whenever a note is played. Use it to match the modulation to the tempo of a song with a specific note length.
- **Beat+Tempo:** The LFO rate is specified in fractions of a beat (note length) and synchronizes to the bars and beats of the song while the transport is running. Use this to match the modulation to the tempo and meter of a song.

**Note:** Due to its polyphonic architecture, LFO3 offers only three synchronization modes: **Each Note**, **Step Seq**, and **Note+Tempo**.

5. **Depth:** Each LFO can be modulated in depth (amplitude) to allow for fade-ins and fade-outs of a modulation from the LFO and this drop-down menu lets you select the source of your modulation. For example, use one of the Modulation envelopes to shape the LFO dynamically whenever you play a note. Alternatively, you can use the modulation wheel for control over the LFO Modulation depth.
6. **Amount:** This slider lets you adjust the depth (or intensity) of the modulation source you have selected. To increase the modulation, move the fader to the right. To decrease the modulation, move the fader to the left.

## LFO 3



The controls of LFO 3 are identical the controls of LFO 1-2, with only one exception: In addition to depth modulation, LFO 3 allows for rate modulation. This is done through an additional drop-down menu added to the lower-left corner of the LFO 3 page. This addition lets you, for example, use key track as Modulation source to make the Modulation rate of LFO 3 track the keyboard.

1. **Rate Modulation:** This drop-down menu selects the target of your modulation source. You can select **Depth** or **Rate**.

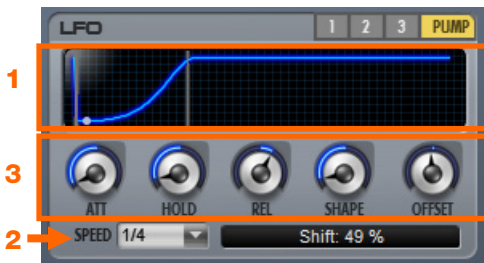
**To assign rate modulation on LFO3:**

1. Click the **Rate Modulation** selector and select **Rate** or **Depth**.
2. Select a modulation source from the drop-down menu in the middle.
3. Use the fader on the right to determine the amount of modulation that takes place.
  - To increase the modulation, move the fader to the right.
  - To decrease the modulation, move the fader to the left.

**Note:** The monophonic design of LFO 1 and LFO 2 does not allow for rate modulation. Therefore, **Depth** is the only destination for LFO 1 and LFO 2.



## Pump LFO



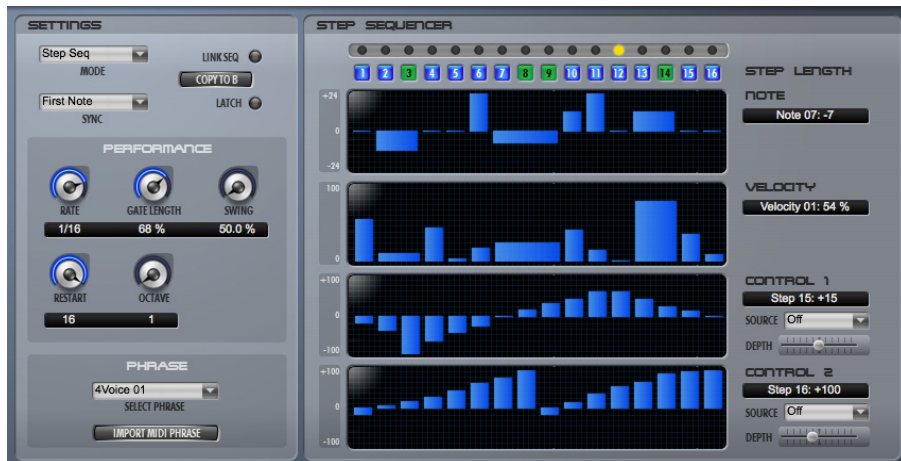
This is a unique envelope that simulates the "side-chaining" or "pumping and breathing" effect that is commonly heard in popular dance music. Normally, this is done by keying the gain reduction of a mix bus compressor to the kick drum. This compresses the entire mix (or a chosen sub-group).

In the case of Hybrid, this rhythmic effect that can be applied to much more than the overall mix. With Hybrid, the Pump LFO is a rhythmic modulation source that can be routed a variety of specific parameters. You are not limited to affecting the overall volume of the sound—you can affect things like pitch or filter settings.

1. **Waveform:** This display shows the waveform of your LFO. The blue line shows the modulation shape, and the moving white dot represents the current position of the modulation.
2. **Speed:** This drop-down menu sets the speed of the modulation. This parameter is in musical subdivisions based on your audio application's master tempo.

3. **Pump Controls:** These knobs are used to set the shape of the LFO.
- **Attack:** Sets the time for the attack segment of the Pump envelope.
  - **Hold:** Sets the hold time following the attack segment of the Pump envelope.
  - **Release:** Sets the time for the release segment of the Pump envelope.
  - **Shape:** Sets the shape of the envelope between the **Hold** and **Release** stages.
  - **Offset:** Sets the amount of random variance for the start point of the Pump envelope.

## Sequencer Pages



Hybrid features two independent step sequencers; one for Part A and one for Part B. Step sequencers play an important role in creating modern-sounding patches. Both offer nine different Playback modes ranging from classic step sequences to a vast selection of arpeggios and MIDI phrases. Depending on the mode, the step sequencers can deliver both stepped modulation signals and musical phrases.

**Note:** The two Sequencers (for Part A and Part B) offer identical sets of controls. For this reason, the following discussed controls apply to both Part A and B.

## Sequencer Page: Step Sequencer

In the Step Sequencer section, there are four rectangular displays called "sequencer lanes." These lanes carry note, velocity, and modulation data that the sequencer plays back. The sequencer lanes have 16 "steps" each, and their timing is always synchronized (i.e., they always playback together). The blue vertical bars in each line illustrate the values of a step. When triggered, the sequencer plays through each step and synchronizes itself to your software's tempo.

### 1. Step Position Indicator:

When the sequencer is playing, these LEDs indicate the current position within the sequence.

### 2. Gate On/Off Switches:

These 16 buttons determine whether the lanes below will play, be muted, or be joined to the previous step (or steps), creating a "tied" note. Active steps are illuminated.

### 3. Note Value:

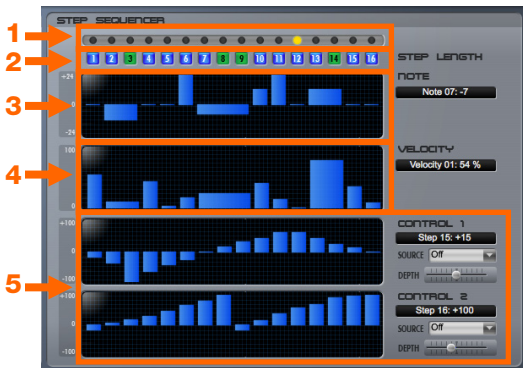
This lane sets the MIDI note of each sequencer step.

### 4. Velocity Value:

This lane sets the MIDI velocity of each sequencer step.

### 5. Control 1/2:

These two lanes are always active no matter which Playback mode you use. They appear as Modulation Sources **Seq1** and **Seq2** on the Mod pages. For example, you can select **Seq1** as a modulation source for Filter cutoff.

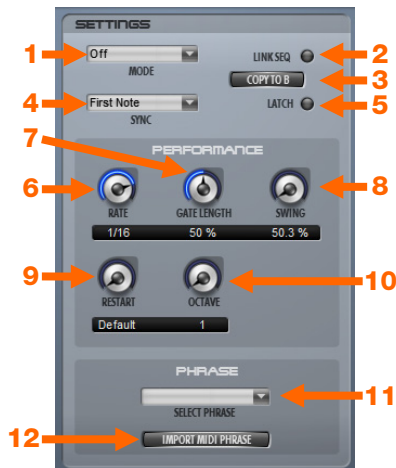


**Note:** The Control 1 and 2 lanes have a **Source** selector and a **Depth** fader for modulating the sequences' depth with MIDI controllers. The modulation signals from the control sequences are bipolar.

## Sequencer Page: Settings

In the Settings section of the Step Sequencer page, you can choose the Sequencer Playback mode and adjust the playing performance. The Settings section includes the following controls:

1. **Sequencer Mode:** Specifies a Sequencer Playback mode or pattern to determine how the step sequencer triggers the notes from the keyboard. For more information on Sequencer Playback modes please see **About the Playback Modes** section of this chapter.
2. **Link Seq:** Links the behavior of the step sequencers of Part A and B. See **Linking Sequencers and Copying Settings** later in this chapter.
3. **Copy to A / Copy to B:** Applies the settings of one step sequencer to the other. See **Linking Sequencers and Copying Settings** later in this chapter.



4. **Sync:** Specifies when the sequencer or arpeggio pattern starts and when rescans of the keyboard happen whenever you hit a note. A rescan of the keyboard transmits the notes you play to the step sequencer and alters the playback of the pattern, as follows:
  - **First Note:** The pattern starts with the first note you play. Playing new notes rescans the keyboard and alternates the pattern without restarting it.
  - **Each Note:** The pattern starts by playing a note. Hitting new notes causes a rescan of the keyboard and restart of the pattern.
  - **Beat:** When you hit a note, the pattern waits for the next beat to start the pattern or rescan the keyboard. This mode is often referred to as input quantization.
5. **Latch:** In Latch mode, the pattern continues playing even when you release the notes on the keyboard. Hitting new notes causes a rescan of the pattern. The button is lit when Latch mode is active.

**Tip:** With Latch deactivated, you can use the sustain pedal to temporarily put the sequencer into Latch mode.
6. **Rate:** Chooses a note length to set the speed at which the pattern advances. In general, the note length equals the length of a step.
7. **Gate Length:** Sets the gate length for all steps of the pattern. The full gate length of 100% equals the note length set by rate.
8. **Swing:** Delays every second step and plays it off-beat, creating a "swing" feel.
9. **Restart:** Forces the pattern to restart after the specified number of steps. The control range is 1 to 16, or Off. The parameter is especially useful with arpeggio. For example, an arpeggio with five notes running at a rate of 1/8th usually does not fit into a 4/4 beat; the pattern repeats off-beat. By choosing Restart after 8 steps, it restarts every bar. By choosing 16 steps, it restarts every second bar.
10. **Octave:** Sets the number of octaves over which the arpeggio plays, from 1 to 4.

**Note:** The Octave parameter only affects the arpeggios' Playback modes.

## About the Playback Modes

The Step Sequencer features nine Playback modes. These modes determine how the sequencer responds to MIDI input data. Depending on the selected mode, the step sequencer can also function as an arpeggiator or a MIDI phrase player.

**Note:** Each Hybrid Part has its own sequencer that can be set independently.



- **Off:** The Sequencers including Control 1 and 2 are switched off. Notes can only be triggered from a keyboard.
- **Step Seq:** This mode provides a classic step sequencer behavior. Incoming MIDI notes are retriggered by the gate steps and transposed by each step of the note sequencer. Use the gate buttons to mute steps of the sequence. This does not affect the control sequences, which always transmit their values.
- **Random Seq:** This mode is similar to Step Seq mode, but the steps play randomly.
- **Ctrl Seq:** In this mode, only the two control sequences play. The gate, note, and velocity sequencers do not transmit anything; they have no influence on the sound and notes from the keyboard trigger the way you play them. To control a synthesizer parameter through the control sequences select **Seq1** or **Seq2** as the modulation source within a Part's modulation matrix.

- **Up:** This mode plays arpeggio notes in an upward direction. Notes from the keyboard trigger repeatedly in ascending order over one or more octaves. Each note plays with its original velocity. Note and velocity sequences do not transmit anything. Control sequences play along with the arpeggio and reset to Step 1 whenever the arpeggio restarts.
- **Down:** This mode plays arpeggio notes in a downward direction. Notes from keyboard trigger repeatedly in descending order over one or more octaves. Notes play with their original velocity. Note and velocity sequences do not transmit anything. Control sequences play along with the arpeggio and reset to Step 1 whenever the arpeggio restarts.
- **Up+Down:** This mode plays arpeggio notes in an upward-then-downward direction. Notes from keyboard trigger repeatedly, first in ascending then in descending order over one or more octaves. Each note plays with its original velocity. The note and velocity lanes do not transmit anything. Control sequences play along with the arpeggio and reset to Step 1 whenever the arpeggio restarts.
- **As Played:** This mode plays arpeggio notes as they are played or triggered, with their original velocity. The note and velocity lanes do not transmit anything. Control sequences play along with the arpeggio and reset to Step 1 whenever the arpeggio restarts.
- **Random:** This mode plays arpeggio notes in a random order with their original velocity. The note and velocity lanes do not transmit anything. Control sequences play along with the arpeggio. Control sequences reset to step one whenever the arpeggio restarts.
- **Phrase:** This mode plays whole MIDI Phrases triggered by single or multiple notes you play. The featured phrases offer a wide range of typical playing styles in music. A note from the keyboard transposes the phrase, and triggers additional notes according to its style. Note and velocity sequences and control sequences do not transmit anything in this mode.
- **MIDI Phrases:** MIDI phrases can be triggered to play back when playing a note on your keyboard. Hybrid comes with over 150 factory MIDI phrases or you can load your own short MIDI files.



## "How-To" Instructions

### To play the sequencer or arpeggiator:

1. Select a sequencer or arpeggio mode from the **Mode** drop-down menu in the **Settings** section of the **Sequencer** page.
2. Play a note on the keyboard.

**Note:** Sequencer A is always assigned to Part A and Sequencer B is always assigned to Part B. For your convenience, you can link the editing of the sequencers and/or copy their settings from one Part to the other. For more information, see **Linking Sequencers and Copying Settings**.

### To play a MIDI phrase:

1. Select **Phrase** mode in the **Settings** section.
2. In the **Phrase** section, click the drop-down menu and select any of the available phrases.
3. Play a note on the keyboard.

### To import a MIDI phrase:

1. Click the **Import Phrase** button to open the file browser of your system.
2. Choose a standard MIDI file from the file browser.

### To enter sequencer data, do one of the following:

- Drag single bars up or down to increase or decrease the step values.
- Shift-click and drag the mouse horizontally over the steps you want to edit.
- Click on the step you want to edit. Then, click on the sequence's text box and type in a value. For negative values, type a minus (-) sign before the value.

## Linking Sequencers and Copying Settings

You can link the editing of the sequencers or copy their settings from one Part to the other. This includes all settings and sequencer lanes. The direction for copying is always from the source sequencer to the destination sequencer.

With link activated, the sequencer controls are linked. Any new settings on one sequencer will be applied to the both sequencers. When unlinked, the selected sequencer can be edited separately without affecting the other sequencer.

### To link Sequencer settings:

- In the **Sequencer** page, click the **Link Seq** button to link the Sequencer settings of Part A and B. The button is highlighted when activated.

### To copy sequencer settings, do one of the following:

- From the **Seq A** page, click the **Copy to B** button.
- From the **Seq B** page, click the **Copy to A** button.

## Common Page



The Common page provides additional controls that influence the overall playing behavior and general performance of Hybrid. The Common page includes the following sections:

- **Global Section:** This section gives access to playing- and performance-oriented settings, which include Morph controls, unison, pitch bend, and key split.
- **Pitch/Voice Section (A and B):** These sections provide additional sound settings for Parts A and B. They affect the general tuning and pitch modulation of the Parts. You can limit Hybrid's CPU demand with the **Voice Limit** parameter. The remaining settings affect the voice, envelope trigger, and portamento settings for each Part.
- **Plug-in Settings Section** These settings configure the basic setup of Hybrid. These settings save with the session, not with a patch. For example, you can adjust the Master Tuning of the synthesizer.

**Note:** Global and Pitch/Voice settings are saved with a Hybrid patch. Plug-in settings are saved with the session or through the **Save Settings as Default** function of Hybrid. When settings are saved as a default, each new instance of Hybrid uses those settings as a default.

## Common Page: Global



1. **Unison Part A/B:** Unison plays the sound monophonically with multiple voices. The Unison Voices knob (see below) determines how many voices are used. Click either switch to activate Unison for Part A or B.
2. **Unison Voices:** Specifies the number of voices in unison mode, from 2 to 8 voices.
3. **Unison Detune:** Thickens unison sounds by adding pitch deviation between the voices. The control range is from 0.0 to 100.0 cents.
4. **Unison Pan:** Spreads the unison voices across the stereo panorama. A medium value spreads the voices equally across the stereo panorama. A high setting plays half of the voices hard left and half of the voices hard right.
5. **Pitch Bend Range:** Adjusts the pitch bend range from the MIDI pitch bend controller, from 0 to 24 semitones. There are also two special options at the end of the knob range.
  - **12Q:** Bends pitch one octave up and down quantizes to the nearest semitone.
  - **Harm:** Bends the pitch through harmonics 1, 2, 3, 4, 5, and 6 with the 3rd harmonic in center.
6. **Key Split:** Sets and activates a split point by MIDI note number. Keys below the split point play Part A, while keys above the split point play Part B. Turn the control fully counter-clockwise to deactivate the key split.
7. **Morph Assign Controls:** For information on the Morph controls, see the **Morph Group Controller** section of this guide.

## Common Page: Pitch/Voice



8. **Tuning Controls:** These knobs adjust the tuning of the each voice.
  - **Octave:** Sets the tuning of the Part in octave steps, from -2 to +2 octaves.
  - **Tune:** Adjusts the coarse and fine tune of the Part simultaneously from -7.00 to +7.00 semitones. This knob adjusts in semitones and cents simultaneously.
9. **Envelope Trigger Mode:** The envelopes of a "stolen" note can restart from zero or they can be "picked up" just from where they are located:
  - **Legato:** Envelopes resume from current location (slight variation in notes).
  - **Restart:** Envelopes restart from zero (no variation among notes).

**Tip:** Legato mode mimics the behavior of vintage analog envelopes.
10. **Voice Mode:** Determines if Part has polyphonic or monophonic playback:
  - **Mono:** Plays the Part with one voice. Depending on the Envelope Trigger mode, overlapping notes play legato or restart.
  - **Poly:** Plays the Part polyphonic. Voice stealing does not occur unless the played notes exceed the maximum number of voices set by Voice Limit.

11. **Voice Limit:** Limits the maximum number of voices, from 2, 4, 8, 16, 32, and Off. When this parameter is set to **Off**, Hybrid voice limits are computer-dependent. By setting a voice limit, Hybrid's CPU demand can be tailored to suit the current session. For example, use a setting of 2 or 4 voices for a bass sound. Voice-stealing happens more often with a setting this low, but this is usually okay for a bass sound.

**Tip:** Voice Limit can be used creatively. Reduce the voice limit to a few voices and set the **Envelope Trigger Mode** to **Legato**. Increase envelope attack and release times and play a fast sequencer pattern. Listen how the envelopes smoothly react like envelope followers.

12. **Pitch Bend On/Off:** Switches MIDI pitch bend on and off.
13. **Pitch Modulation:** Allows for pitch modulation of a Part so that all oscillators are modulated at the same time, including Oscillator 3 and the Sub oscillator. To select a modulation source, click the **Mod Source** selector and select a source from the drop-down menu. To adjust the modulation depth, use the **Modulation Level** fader.

**Tip:** To apply classic vibrato to a Part, assign **LFO1** or **LFO2**. Use the depth modulation of the assigned LFO to control the vibrato with the modulation wheel.

14. **Portamento Controls:** Portamento sounds do not reach their pitch immediately; they glide with a smooth transition from one note to another. The **Time** knob adjusts the time for the pitch to glide between notes, from 0-32 seconds. This effect is commonly used for monophonic lead sounds. You can choose from the following modes:
- **Off:** Portamento is off. The played notes reach their pitch immediately.
  - **Legato:** Portamento only applies to overlapping notes (legato). Notes with a pause in between them reach their pitch immediately. Legato notes experience a smooth transition from one pitch to the other. The transition time specifies through the portamento time.
  - **On:** Portamento applies to all notes. All notes experience a smooth transition from one pitch to another. Transition time is determined by the portamento time.

**Tip:** Portamento works in monophonic and polyphonic Voice mode. However, its more popular use is with monophonic lead sounds (when Voice Mode is set to mono).

15. **Osc Restart:** Click this to restart the oscillator for that Part. When each note is played, it will begin at the same point in its wave phase each time.

**Tip:** Use this on sounds and sequences that repeat quickly to ensure the attacks of each note sound identical.

16. **Doubling:** Adds a detuned, phase-aligned signal to the original signal with optimal crossfading and panning, effectively widening the signal's sound. When this button is lit, doubling is activated for that Part. Adjust the amount of doubling with the **Width** knob.

## Common Page: Plug-In Settings



17. **Master Tune:** Changes the global tuning of the synthesizer. Use the **Semi** and **Cents** controls to correct for variations from the standard tuning of A440 Hz.
  - **Semi:** Allows for steps in semitones from -12 to +12.
  - **Cents:** Allows for steps in cents (hundredths of a semitone) from -100 to +100.
18. **Receive Control Change:** Activates or deactivates reception of MIDI continuous controllers. When this button is lit, continuous controllers are received. When the button is unlit, the Hybrid ignores continuous controller messages.
 

**Tip:** Control Change does not affect continuous controllers for modulation wheel, breath, and foot pedal; these are always received as they are part of Hybrid's synthesis structure and modulation matrix.
19. **Reset Assignments:** Deletes "learned" MIDI assignments and restores Hybrid to its default factory MIDI assignment.
20. **Receive Channel Pressure:** Activates or deactivates the reception of aftertouch MIDI data. When this button is lit, the plug-in receives channel after touch messages. When the button is unlit, Hybrid ignores these.



21. **Knob Mode:** Adjusts the behavior of all Hybrid knobs. There are three modes:
- **Linear:** The rotary controls are adjusted by dragging the control horizontally or vertically with the mouse.
  - **Circular Absolute:** Knobs are adjusted by clicking the control and drawing a circle with the mouse. The control immediately jumps to the position that you have clicked.
  - **Circular Relative:** Same as the Circular Absolute mode, but the control adjusts relative to the position where you have clicked. Use this mode to avoid jumping to values when you click the control.
- Tip:** For finer adjustments in Circular Absolute and Circular Relative modes, simply drag in bigger circles with the mouse, or Control-drag-circle (Windows) or Command-drag-circle (Mac OS X) the knob.
22. **Tooltips:** Activates or deactivates Tool Tips. A Tool Tip is a small window that shows some descriptive text when you hold the cursor over a specific control.
23. **Save Settings as Default:** Saves all settings and the current MIDI controller mapping as Hybrid's default. This means each time you launch a new instance of Hybrid, these settings will be used as a default.

## Effects Page

### Part A/B Inserts

### Master Effects



The Effects page includes two effects Inserts for each Part, and a Master Effects section that can be used to affect both Parts.

The Inserts are connected in series (i.e., Insert 1 followed by Insert 2). They can be used to create subtle or drastic changes to the sound of a Part. These Inserts operate after all synthesis modules, and one Part's insert does not affect the sound of the other Part in any way.

Hybrid also has a Master Effects module that allows you to add Chorus, Delay, and/or Reverb effects to the sound of Hybrid. Unlike the Insert effects, the Master effects section can receive "send" signals from both Parts.

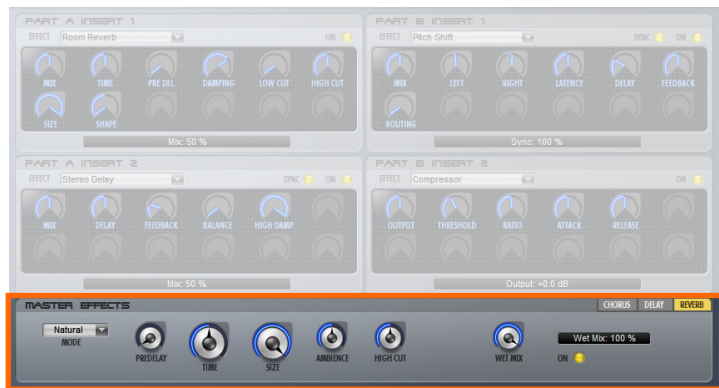
## Effect Page: Effect Inserts



The Effects Inserts of Part A are located to the left of the Effects page; the Effect Inserts of Part B are located to the right. Selecting and editing effects for these modules is exactly the same.

1. **Effect Selector:** This drop-down lets you select any of the available effects for use on your selected Part. To clear the insert of any effects, select **None** from this menu.
2. **Sync:** Certain effects have parameters that can be synchronized to the master clock of your audio application (such as tempo or LFO rates). If the selected effect has such parameters, this option appears at the top of the effect area. When this feature is engaged, the light is illuminated and certain parameters display their values as fractions of a beat. When this feature is switched off, the same parameters display their values in seconds.
3. **On:** This buttons switches the effect on and off. The button is illuminated when the effect is active.
4. **Effect Area:** Each effect algorithm is of varying complexity and unique in its sound and function. For this reason, the different effects have a varying number of valid controls. The maximum number of controls for each effect's Insert is 12. Unused controls are grayed out.

## Effect Page: Master Effects



### Master Effects

The Master Effects section is located at the bottom of the Effects page and lets you apply chorus, delay, and/or reverb effects to one or both of your Hybrid Parts. Unlike the Insert Effects, these effects are shared among both Parts and are used to shape the overall "global" character to your Hybrid patch.

**Note:** You can only view one Master Effect at a time, but all three effects are active and can be used simultaneously. Use the **Chorus**, **Delay**, and **Reverb** buttons at the top right of this section to select which effect you'd like to view.

#### To edit Chorus, Delay, or Reverb:

1. Adjust the Part's send level in the **Amplifier** section of the Part page.
2. In the **Master Effects** section of the **Effects** page, click the tab of the effect you want to edit. The set of controls in the section below changes accordingly.
3. Use the knobs to adjust the sound to your preferences.

## Master Effects: Chorus



If two identical instruments play the same part, there are minor inconsistencies in performance that result in a pleasant "chorusing" effect. The Chorus master effect simulates this sound by modulating two delay lines and mixing them together with the original sound. This master effect also includes a Flanger mode for applying tape flanging effects. Flangers use shorter delays and add a feedback path to the delay lines to create electronic jet-like sounds.

1. **Mode:** Selects the basic sound character of the effect from the following options:
  - **Chorus:** Applies a short modulated delay to give depth and space to the sound.
  - **Flanger:** Applies a shorter modulated delay, delivering an "edgier" sound.
2. **Rate:** Adjusts the speed of the pitch modulation. Faster settings result in more motion and movement in the sound.
3. **Depth:** Adjusts the intensity of the pitch modulation.
4. **Phase:** Spreads the pitch modulation across the stereo field. The control range is from 0° to 180° and describes the phase between the left and right modulation.
5. **Feedback:** First adds a jet-like, then a ringing tone to the effect.
6. **Wet Mix:** Adjusts the amount of chorus that mixes with the original sound.

**Tip:** If you want a chorus on one Part only, add a chorus to one of the Part's effects Inserts, instead of to the Master Effects section.

7. **On:** Activates and deactivates (bypasses) the effect.

## Master Effects: Delay

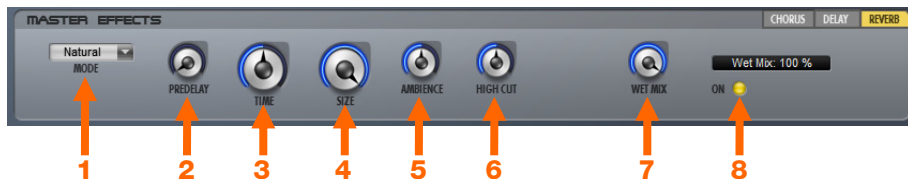


This master effect offers classic echo effects with a twist. This effect includes the typical parameters commonly found in delay modules, such as independent time and feedback controls as well as high-frequency damping. In addition to these common parameters, Hybrid's delay includes a **Character** knob that adjusts sound quality from digital (clean and precise) to vintage (which approximates the sound of an analog tape delay).

1. **Mode:** Selects the basic layout of the feedback path for the left and right delay line. Choose one of the following modes:
  - **Dual:** The feedback paths of the left and right delay lines are in parallel, meaning the left and right channels feed their outputs to their respective inputs.
  - **Cross:** The feedback paths of the left and right delay lines are crossed, meaning the left channel feeds its output to the input of the right channel and the right channel feeds its output to the input of the left channel.
2. **Sync:** Activating this button lets you adjust delay times in fractions of a beat. If Sync is disabled (unlit), the delay times are adjusted in seconds.
3. **Time Left:** Sets the elapsed time before the left channel repeats the input sound.
4. **FB Left:** Adjusts the feedback level of the left channel. The higher the value, the more echoes will repeat on that channel.
5. **Time Right:** Sets the elapsed time before the right channel repeats the input sound.
6. **FB Right:** Adjusts the feedback level of the right channel. Higher the value, the more echoes will repeat on that channel.

7. **Hi Damp:** Adjusts the high frequency loss of repeated echoes. This simulates the regeneration loss from analog tape echoes. Use higher values for darker echoes.
8. **Character:** Adjusts the basic sound quality of the delay effect from digital to vintage. Use higher values to age the sound of the delay.
9. **Wet Mix:** Adjust the amount of delay that mixes with the original sound.  
**Tip:** If you want a delay on one Part only, add a delay to one of the Part's effects Inserts, instead of to the Master Effects section.
10. **On:** Activates and deactivates (bypasses) the effect.

## Master Effects: Reverb



This master effect provides a studio quality reverb to add spaciousness to your sounds.

1. **Mode:** Selects one of three basic timbres or tonal qualities of the room:
    - **Bright:** For brilliant, clear-sounding spaces.
    - **Natural:** Produces open, natural-sounding spaces.
    - **Dark:** With this type, high frequencies in the reverb tail decay faster.
  2. **Pre-Delay:** This knob adjusts the time (in milliseconds) elapsing between the direct sound and the arrival of the first reflection.
  3. **Time:** Adjusts the reverb time (the decay of the reverb tail).
  4. **Size:** Adjusts the dimensions of the room. Smaller values create smaller spaces.
  5. **Ambience:** Puts the sound source deeper into the room. The effect is comparable to bringing up the level of ambient or overhead microphones during the mix.
  6. **Hi Cut:** Adjusts the timbre or tonal quality of the reverb tail from dark to bright.
  7. **Wet Mix:** Adjusts the amount of reverb that mixes with the original sound.
- Tip:** If you want a reverb on one Part only, add a reverb to one of the Part's effects Inserts, instead of to the Master Effects section.
8. **On:** Activates and deactivates (bypasses) the effect.



## Presets Page

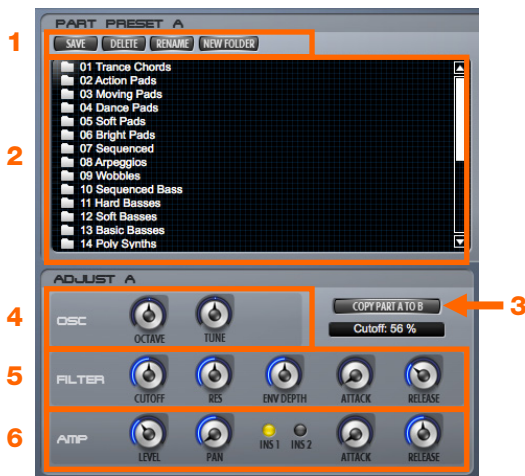


This page provides controls for the management of Hybrid Parts and gives convenient access to the most commonly edited Part parameters. Here, you can save individual Parts that you have created. Alternatively, you can quickly create new patches simply by joining different saved Parts and tweaking their parameters to make them work well together.

The page splits in two halves: To the left you find the preset browser and synthesizer parameters of Part A. To the right you find an identical set of controls for Part B.

**Note:** The Part Presets page helps you manage presets for *single Parts* of a Hybrid sound. If you'd like to save an entire patch (including both Parts and all additional settings), use the **Save/Load Controls** at the top of the Setup section.

## Presets Page: Controls



1. **Folder Operations:** These buttons work with the Part Browser and let you save, delete, rename, and create new Parts and folders.
2. **Part Browser:** This screen lets you navigate to all of the Part Presets stored in various folders.
3. **Copy Part:** This button copies the settings of the current Part into the next Part.
4. **Osc:** These knobs let you adjust the pitch tuning of the selected Part.
  - **Octave:** Sets the tuning of the Part in octave steps.
  - **Tune:** Adjusts the coarse and fine-tuning of the Part simultaneously.

5. **Filt:** These are convenient shortcuts to Filter section knobs on the Part page.
  - **Cutoff:** Adjusts the cutoff frequency.
  - **Res:** Adds character by emphasizing the frequencies around the cutoff.
  - **Env Depth:** Adjusts the depth or intensity of the filter envelope's modulation.

**Note:** Each Hybrid Part can have up to two filters. The **Cutoff**, **Res**, and **Env Depth** knobs on this page affect both filters equally.

  - **Attack:** Sets the time for the attack segment of the Filter envelope.
  - **Release:** Sets the time for the release segment of the Filter envelope.
6. **Amp:** These are convenient shortcuts to Amp section knobs on the Part page.
  - **Level:** Adjusts the volume of the Part.
  - **Pan:** Sets the position of the Part in the stereo panorama.
  - **Ins 1:** Activates and deactivates the first insert effect of the Part.
  - **Ins 2:** Activates and deactivates the second insert effect of the Part.
  - **Attack:** Sets the time for the attack segment of the Amplifier envelope.
  - **Release:** Sets the time for the release segment of the Amplifier envelope.

## Appendix

### Oscillator 1-2 Types

**Saw Sync:** Produces classic hard-sync (hard-synchronized) sounds from a sawtooth waveform. The slave oscillator synchronizes to the pitch of the master oscillator, which means that the wave cycle of the slave oscillator abruptly resets whenever the master oscillator completes a full wave cycle. Only the slave oscillator is sent to the output, producing sharp sounds when shifted up in pitch. The **Shape** control shifts the pitch of the slave oscillator by a maximum of six octaves. You can use an envelope or LFO to modulate the Shape.

**Saw CM:** Cross-modulates (CM) the pitch of a saw wave (carrier) with the output of a triangle wave (modulator). Only the carrier is audible. With Saw CM, the **Shape** control shifts the pitch of the carrier by a maximum of six octaves, which produces sonic inter-modulation or sidebands in the output spectrum. Try using an envelope to modulate the Shape control.

**Multi-Wave:** Generates a stack of seven saw or square waves that play in unison. Use the waveform selector to choose either **Saw** or **Squ** (Square). The **Shape** parameter sets the amount of detuning between the saw or square waves to animate and fatten the sound. This parameter usually needs no modulation.

**Squ Sync:** Produces classic hard-sync sounds from a square waveform (slave oscillator). "Sync" is short for synchronize. The slave oscillator synchronizes to the pitch of the master oscillator, which means that the wave cycle of the slave oscillator abruptly resets whenever the master oscillator completes a full wave cycle. Only the slave oscillator is sent to the output, producing sharp sounds when shifted up in pitch. The **Shape** control shifts the pitch of the slave oscillator by a maximum of six octaves. Use an envelope or LFO to modulate it.

**Squ CM:** Cross modulates (CM) the pitch of a square wave (carrier) with the output of a triangle wave (modulator). Only the carrier is audible. With Squ CM, the **Shape** control shifts the pitch of the carrier by a maximum of six octaves, which produces sonic inter-modulation or sidebands in the output spectrum. Try using an envelope to modulate the Shape control.

**Squ PWM:** Produces a classic pulse-width-modulated square wave. One cycle of a square wave consists of a high level that switches abruptly to its low level halfway through the cycle. The **Shape** control lets you modulate the square wave's pulse width. This is perceived as a pitch deviation that thickens the sound. Typically, the pulse width is modulated by an LFO.

**Wavetable:** Consists of 64 single-cycle waveforms with varying harmonic content. Use the **Waveform** selector to select from the 100 available waveforms. The **Shape** control modulates the oscillator's playback position in the wavetable, which changes the output spectra according to the harmonic information contained in the selected waveform. The position in a wavetable is also called a "wave index." Try using a Modulation envelope to modulate it.

**Tip:** In Wavetable mode (when **Oscillator Type** is set to **Wavetable**), an individual wavetable must be selected. Choose one of the 100 wavetables from the menu.

## Filter Types

### LP: Low-Pass

**LP4:** Four-pole low-pass. Frequencies above the cutoff are attenuated at 24 dB/oct.

**LP3:** Three-pole low-pass. Frequencies above the cutoff are attenuated at 18 dB/oct.

**LP2:** Two-pole low-pass. Frequencies above the cutoff are attenuated at 12 dB/oct.

**LP1:** One-pole low-pass. Frequencies above the cutoff are attenuated at 6 dB/oct.

### HP: High-Pass

**HP4:** Four-pole high-pass. Frequencies below the cutoff are attenuated at 24 dB/oct.

**HP3:** Three-pole high-pass. Frequencies below the cutoff are attenuated at 18 dB/oct.

**HP2:** Two-pole high-pass. Frequencies below the cutoff are attenuated at 12 dB/oct.

**HP1:** One-pole high-pass. Frequencies below the cutoff are attenuated at 6 dB/oct.

### BP: Band-Pass

**BP2:** Two-pole band-pass: 6 dB/oct high-pass and 6 dB/oct low-pass in series. Frequencies below and above the cutoff are attenuated at 6 dB/oct.

**BP4:** Four-pole band-pass: 12 dB/oct high-pass and 12 dB/oct low-pass in series. Frequencies below and above the cutoff are attenuated at 12 dB/oct.

**HP+LP: Multi-Pole Band-Pass Combination**

**HP2+LP1:** Combination that forms a three-pole asymmetric band-pass. Frequencies below and above the cutoff are attenuated. With a 12 dB/oct high-pass and a 6 dB/oct low-pass in series, low frequencies are faster attenuated than high frequencies.

**HP3+LP1:** Combination that forms a four-pole asymmetric band-pass. Frequencies below and above the cutoff are attenuated. With an 18 dB/oct high-pass and a 6 dB/oct low-pass in series, low frequencies are faster attenuated than high frequencies.

**HP1+LP2:** Combination that forms a three-pole asymmetric band-pass. Frequencies below and above the cutoff are attenuated. With a 6 dB/oct high-pass and a 12 dB/oct low-pass in series, high frequencies are faster attenuated than low frequencies.

**HP1+LP3:** Combination that forms a four-pole asymmetric band-pass. Frequencies below and above the cutoff are attenuated. With a 6 dB/oct high-pass and an 18 dB/oct low-pass in series, high frequencies are faster attenuated than low frequencies.

**BR: Band-Reject**

**BR2:** Two-pole band-reject: 6 dB/oct low-pass and 6 dB/oct high-pass in parallel. Frequencies around the cutoff are attenuated at 6 dB/oct.

**BR4:** Four-pole band-reject: 12 dB/oct low-pass and 12 dB/oct high-pass in parallel. Frequencies around the cutoff are attenuated at 12 dB/oct.

## **BR+HP/LP: Multi-Pole Band-Reject Combination**

**BR2+LP1:** Combination that forms a three-pole asymmetric band-reject. Frequencies around and above the cutoff are attenuated. With a two-pole band-reject and a 6 dB/oct low-pass in series, high frequencies obtain more attenuation than mid frequencies.

**BR2+LP2:** Combination that forms a four-pole asymmetric band-reject. Frequencies around and above the cutoff are attenuated. With a two-pole band-reject and a 12 dB/oct low-pass in series, high frequencies obtain more attenuation than mid frequencies.

**HP1+BR2:** Combination that forms a three-pole asymmetric band-reject. Frequencies below and around the cutoff are attenuated. With a 6 dB/oct high-pass and a two-pole band-reject in series, low frequencies obtain more attenuation than mid frequencies.

**BP2+BR2:** Combination that is sometimes called a four-pole tooth filter because the frequency plot of the filter forms the shape of a tooth.

## **AP: Phase Shifter**

**AP3:** Phase shifter, using three poles of the filter for phasing effects.

**AP3+LP1:** Phase shifter with a one-pole low-pass in series. In addition to the phasing effect, high frequencies are attenuated at 6 dB/oct.

**AP3+HP1:** Phase shifter with a one-pole highpass in series. In addition to the phasing effect, low frequencies are attenuated at 6 dB/oct.



## Low-Frequency Oscillator (LFO) Types

Hybrid is capable of producing a several LFO wave shapes, as described below:

**Sine:** Smooth modulation shape curving up and down.

**Triangle:** Soft modulation shape ramping up and down. The turning points at the maximum amplitude of the signal have an edge.

**Sawtooth:** Downward ramp modulation shape. The signal abruptly starts with an edge at maximum positive amplitude and descends with a line forming the shape of a downward ramp.

**Square:** Alternating modulation shape trilling up and down.

**S&H:** Randomly stepped modulation for classic sample and hold effects.

**S&H Alternate:** Randomly stepped modulation like sample and hold that always alternates between high and low steps.

**Random:** Smooth random modulation.

**Drift:** Quasi-analog modulation shape that compares well to variations from electronic components.

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